Climate Change and Human Health Literature Portal

National Institute of
Environmental Health Sciences

Sink or swim? Water security for growth and development

Abstract:

Achieving basic water security, both harnessing the productive potential of water and limiting its destructive impact, has always been a societal priority. To capture this duality, water security is defined here as the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies. This paper looks broadly at those countries that have achieved water security, the paths they chose and the costs they paid, and those countries that have not achieved water security and how this constrains economies and societies. It defines three typologies: countries that have harnessed hydrology, those hampered by hydrology and those that are hostage to hydrology. It finds that countries remaining hostage to hydrology are typically among the world's poorest. They face "difficult" hydrologies often characterized by high inter- and intra-annual rainfall and runoff variability, where the level of institutional and infrastructure investment needed is very high and the ability to invest is low. This paper seeks to capture the dynamics of achieving water security in a hypothetical water and growth "S-curve", which illustrates how a minimum platform of investments in water institutions and infrastructure can produce a tipping point beyond which water makes an increasingly positive contribution to growth and how that tipping point will vary in different circumstances. As there are inevitable trade-offs, achieving water security is never without social and environmental costs; in some countries these are significant, often unforeseen and even unacceptable. This brief analysis suggests that the only historically demonstrated path to achieving water security at the national level has been through investment in an evolving balance of complementary institutions and infrastructure, but that lessons exist for following this basic path in more sustainable and balanced ways. Insights are provided for balancing and sequencing investments, adapting to changing values and priorities, and pushing down the social and environmental costs. The paper concludes that most water-insecure countries today face far greater challenges than those that achieved water security in the last century and are wealthy countries today. They face more difficult hydrologies and a greater understanding of and therefore greater responsibility for, the social and environment trade-offs inherent in water management. As the costs of poor countries not achieving water security, in terms of human suffering, sustained poverty, constrained growth and social unrest, would be very high, achieving water security is a challenge that must be recognized and must be met.

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Resource Description

Communication: ⊠

resource focus on research or methods on how to communicate or frame issues on climate change;

surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☒

audience to whom the resource is directed

Policymaker

Exposure : ☒

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Security

Geographic Feature: ☒

resource focuses on specific type of geography

Freshwater

Geographic Location: ☒

resource focuses on specific location

Global or Unspecified

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☒

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type: ☒

format or standard characteristic of resource

Review

Timescale: ☒

time period studied

Time Scale Unspecified